MINOLTA XG-M

Similar models: other XG cameras

Batteries: 2 ea. S76 (negative ground)

Fig. 1—top cover removed

Fig. 2—bottom cover removed

Fig. 3—bottom view, TV (shutter-speed) resistor board

Fig. 4—side view, front cover removed

Fig. 5—inclination adjustment points, T-type circuit

Fig. 6—IC4, pin numbering and voltages

Fig. 7—wiring, shutter assembly

Fig. 8—wiring, S-type circuit

Fig. 9—wiring, T-type circuit

ADJUSTMENT LOCATIONS:

Manual 1/1000	A
Auto inclination (slope)	B*
Manual inclination (slope)	C*
Auto LED readout	D
Manual 1/60	E
Auto exposure	F

*Normally not necessary to adjust

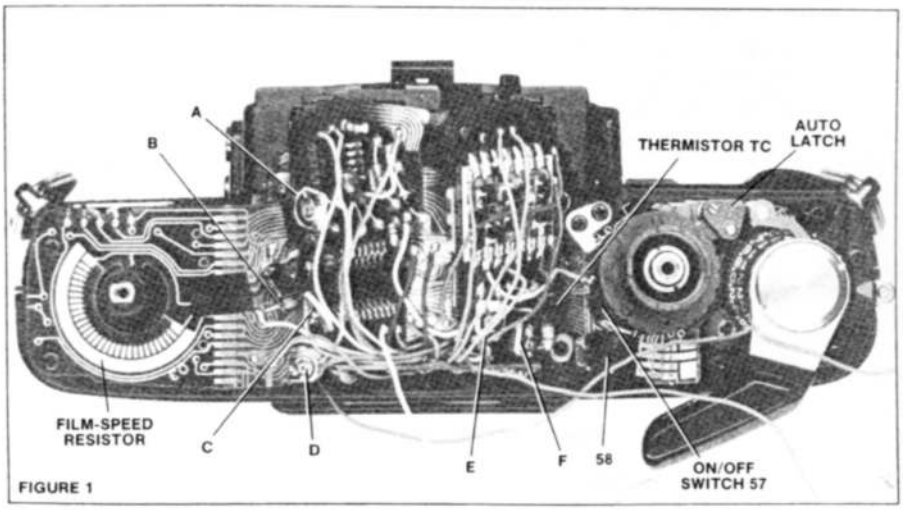


FIGURE 1

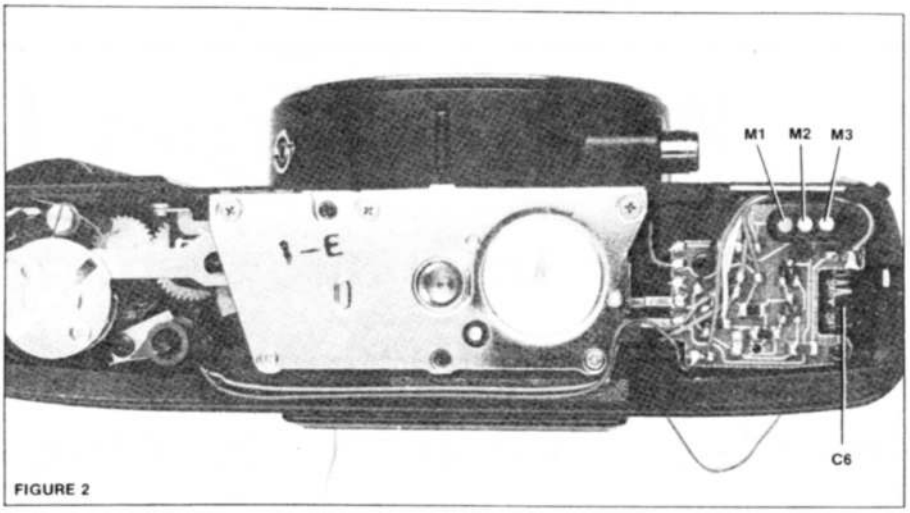


FIGURE 2

ADJUSTMENT VALUES:

Curtain-travel times: 11ms (32mm distance)

Flange-focal distance: 43.7+0.02, -0mm (flange to pressure-plate rails)

Auto and manual inclination voltages: 180+2, -4mv

ADJUSTMENT SEQUENCE:

1. Manual inclination. Set 1/1000. Close S1 (by pushing release button part way) and measure the voltage between pin 14 of IC4 and the lead of thermistor TC that's closer to IC4, Fig. 5. Adjust for 180mv with variable resistor C, Fig. 1, in the Type S circuit. In the Type T circuit, adjust by changing the fixed resistors R21 and R22, Fig. 5. R22 provides a coarse adjustment, and R21 provides a fine adjustment (charts at the end of this report show the available resistance values). If you change a fixed resistor, wait several minutes before taking another voltage reading—the heat from the soldering iron changes the resistance of the thermistor, causing inaccurate voltage readings. The adjustment controls the linearity of the manual speeds. Although it's desirable to check the inclination voltage, adjustment is rarely required. See "Other Comments" for the differences in the two circuits.
2. Auto inclination. Set auto. Close S1 and measure the voltage across resistor R4, Fig. 5 (B in Fig. 1). You should measure

180mv. If not, you can change the value of fixed resistor R4 (see "Other Comments" for the available R4 values). The auto inclination voltage affects the linearity of the auto speeds and rarely requires adjustment.

3. manual 1/60
4. manual 1/1000
5. auto exposure
6. LED readout

Note: The normal adjustments are nearly the same as in other XG models. But, in the XG-M, Minolta recommends adjusting the manual speeds before the auto speeds.

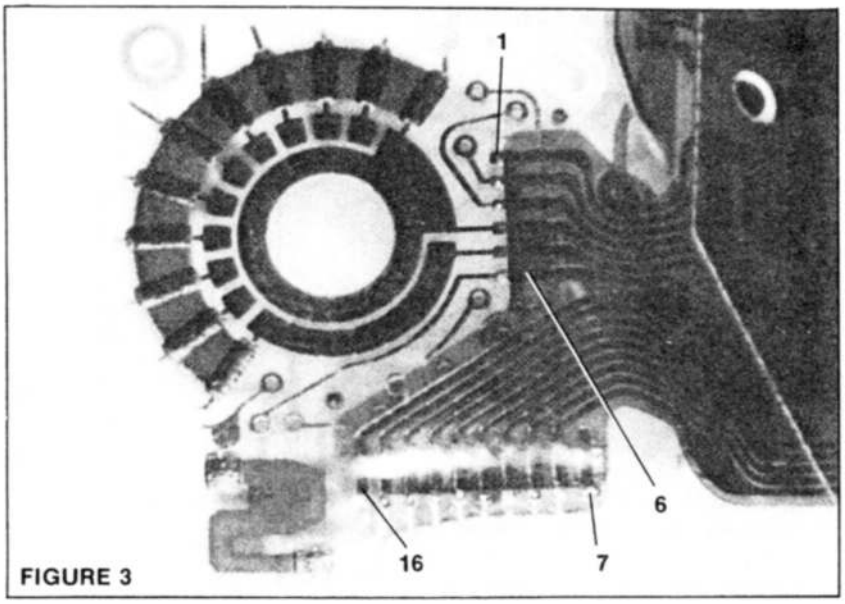


FIGURE 3

DISASSEMBLY HIGHLIGHTS:

Settings for disassembly: ASA 100

Location of left-hand threads: In other XG models, the screw holding the cam at the bottom of the wind shaft has a left-hand thread. The screw has a normal thread in the XG-M. To identify, look for a circle on the top of the screwhead (around the screwdriver slot). The circle identifies a left-hand thread.

Sequence:

1. bottom cover
2. top cover (2 screws and "Minolta" nameplate, shutter-speed dial, wind lever, retaining ring around wind shaft, rewind knob by removing screw in top center of knob, 2 top-cover screws)

   Note: Recent cameras have an additional top-cover screw at the rewind end. When you remove the top cover, the battery-test/auto-lock button will be loose. You can put a piece of tape over the top of the button to hold it in place. Also, the eyelens frame will be loose.

3. unsolder wires from top cover—
   —2 green from hot-shoe flash contact
   —white from dedicated-flash pin

   Note: The T-type circuit has only one green wire going to the top cover.

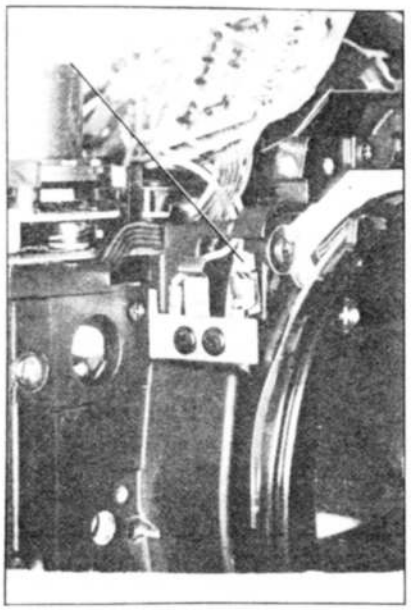
Sequence to remove mirror-box assembly:

1. unsolder wires from motor-drive board—
   —brown and black (release magnet)
   —red (battery box)
2. unsolder 2 battery-box connector tabs from motor-drive board
3. battery-box plate (6 screws)
4. unsolder green wire from X-sync contact (bottom of shutter)
5. peel back leatherette from end of grip (wind-lever end of body)
6. grip assembly (2 screws)
7. right and left front leatherette
8. lift off film-speed brush assembly
9. remove 2 screws, rewind side of circuit board (film-speed resistor)
10. unscrew 3 screws holding speed-selector assembly (1 screw also supports the auto latch which stays with the speed selector; another screw also holds the speed-selector detent — remove the detent screw that's closer to the front of the camera)
11. lift aside speed-selector assembly
12. remove 4 front-plate screws
13. lift out mirror-box/shutter assembly (you can leave wires attached)

Sequence to remove shutter:

1. remove screw and spring holding release-coupling arm, Fig. 2
2. remove front cover (3 screws)

   Note: Spread the slit in the top of the front cover to clear the lens-mounting ring. The lens-latch button and the self-timer button



will be loose. You can put a piece of tape over the self-timer button to hold it in place.

3. remove 3 shutter-retaining screws (front of front plate)
4. lift aside shutter assembly (you can leave the wires attached unless you're going to replace the shutter)

VARIATIONS FROM EARLIER XG MODELS:

Note: In most areas, the repairs and troubleshooting procedures for the XG-M are the same as in other XG models (refer to SPT Journal Mar./Apr. 1982 for the XG-9). This

section describes the differences in the XG-M.

1. The XG-M accepts the motor drive as well as the power winder; the motor-drive board is at the bottom of the camera, Fig. 2. The three pins at the rewind end of the body couple to the motor drive. Pin MD1 turns on the viewfinder LEDs; check by shorting pin MD1 to the battery-box cover — the LEDs should turn on. Pin MD2 releases the mirror; check by shorting pin MD2 to the battery-box cover—the shutter should release. Pin MD3 couples to reset switch S4 through a transistor-switching system to start and stop the motor drive. For a defective component in the motor-drive board, replace the complete circuit #2019-0427-01.
2. You can check release magnet MG2 at the motor-drive board. Short between the red wire coming from the battery box and the brown release-magnet lead. The shutter should release.
3. IC4 is different in the XG-M (part #2019-4304-01). IC4 has 14 pins rather than 12 pins. But the functions of the IC and the symptoms of a malfunction are basically the same (typical symptoms — shutter won't release, no viewfinder LEDs, shutter hangs open). To check IC4, measure the pin voltages, Fig. 6. Check the input voltage at pin 2 (shutter cocked, S1 closed); you should measure the battery voltage. Check the output voltage at pin 13; you should get close to the battery voltage. If you get the input at pin 2, but you don't get the output at pin 13, replace IC4.
4. If you do not get the input at pin 2 of IC4, the symptom will be no shutter release with no viewfinder LEDs. The problem could be poor contact in metering switch S1 or in the on/off switch, Fig. 1. But the most likely cause is a poor solder connection between the flex and the shutter-speed resistor board, Fig. 3. Retouching the solder connections often corrects the problem. Poor contact to the shutter-speed resistor connections, Fig. 3, may cause a failure of the shutter to release, the shutter to hang open, the curtains to travel together, no LEDs, no "M" LED, or a constantly on battery-test LED. Most common symptoms — no "M" LED at the manual settings, no shutter release and no finder LEDs, and no shutter release while finder LEDs work. Retouch the following connections between the shutter-speed resistor board and the flex, Fig 3:
   a. no "M" LED — connection 15
   b. shutter won't release, no LEDs —connection 2 (or a solder bridge between 1 and 2)
   c. shutter won't release, LEDs turn on—connections 3 and 16
   d. curtains travel together at auto — connection 14
   e. curtains travel together at manual — connection 11
5. Poor connections at the film-speed resistor board can cause similar electronic problems.

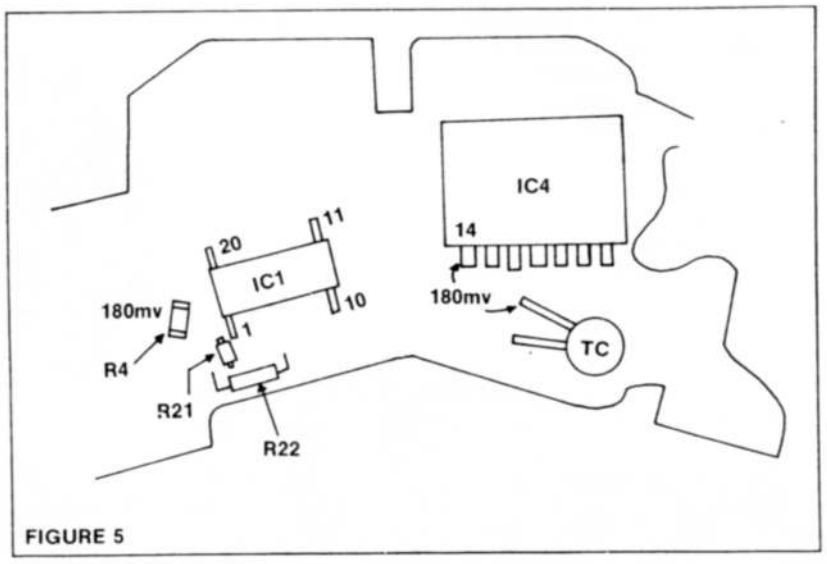


FIGURE 5

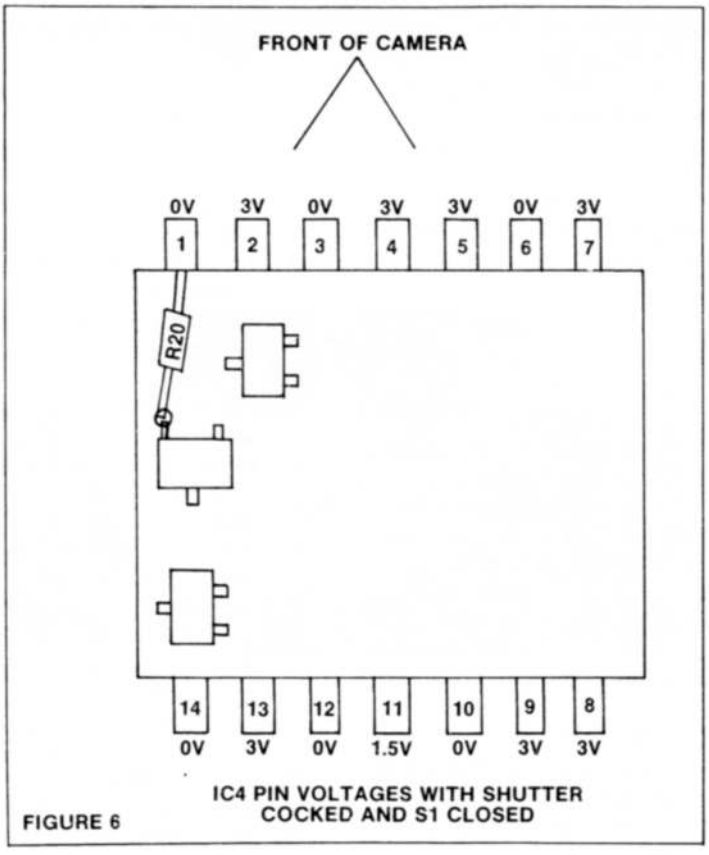


FIGURE 6 IC4 PIN VOLTAGES WITH SHUTTER COCKED AND S1 CLOSED

Retouch the solder connections between the board and the flex for the following symptoms: the shutter won't release, the shutter hangs open, or the curtains travel together.

6. IC's 1, 2, and 3 are the same as in other XG models. However, IC1 has been turned upside down. See Fig. 5 for pin numbering (the dot at the corner of the case identifies pin 1). Also, the pins of IC1 and IC3 are bent to provide a standoff from the circuit board. You can obtain IC1 and IC3 with the preformed pins. The numbers "03" at the end of the parts number indicate the preformed pins. IC1 — 2006-4301-03.
7. The symptoms for a defective IC1 are the same as in other XG models — usually the shutter hangs open, especially if IC1 has been damaged by an off-brand flash unit. To check, measure the input voltage at pin 1; you should get the battery voltage with S1 closed. Then check for a voltage reading at pin 8. You should get 0V. If you get a voltage reading, IC1 has probably been damaged by an off-brand flash unit.
8. The XG-M provides an LED readout at the manual speeds. The readout indicates the correct shutter-speed setting for the light conditions (not the shutter speed actually selected). Also, at the manual settings the "M" LED turns on in the finder. An override for the auto lock permits the shutter to release even under high-light conditions that would cause overexposure (the auto lock prevents the shutter from releasing under such conditions on auto). Switch S8, Fig. 1, has additional contacts to provide the metering on manual and the "M" LED.
9. The auto latch, Fig. 1, also serves as the battery-test switch.
10. The self-timer switch in the XG-M is at the side of the front plate, Fig. 4. Lift the self-timer button to close the self-timer switch. You can cancel the self-timer only before the first 3 seconds (return the self-timer button to the normal position to cancel). After 3 seconds, you'll still get the self-timer delay.
11. If you get the symptom of all the LEDs flickering at the same time, the most likely reason is poor contact in the film-speed resistor. Remove the film-speed brush to clean the switch contacts and reform the brushes. In earlier XG models, the most likely cause of the problem is poor contact in the diaphragm resistor at the front of the camera.

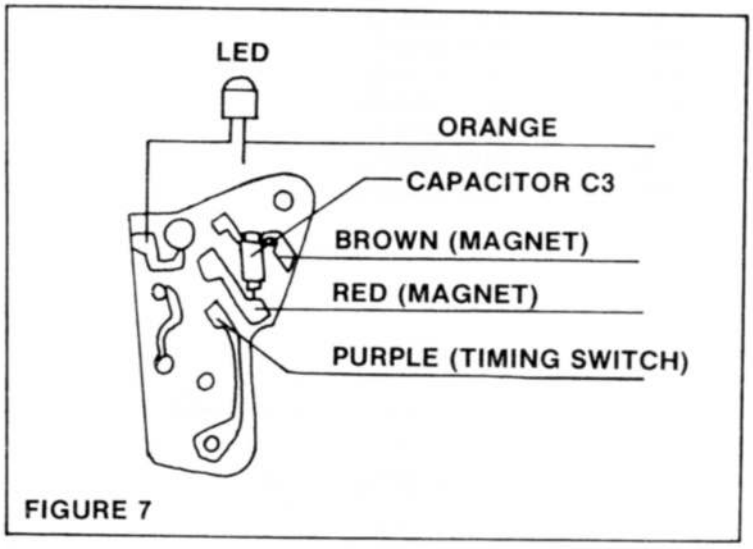


FIGURE 7

OTHER COMMENTS:

1. Product number for XG-M parts — 2019.
2. There are two versions of the flex circuit depending on the factory which manufactured the circuit. If the camera serial number begins with "1", the camera uses the Type T circuit. If the serial number begins with "2", the camera uses the Type S circuit. The main difference is that the Type T circuit does not have the variable resistor for the manual-inclination adjustment; instead, it has two fixed resistors R21 and R22, Fig. 5. Also, there are slight wiring differences between the two circuits. If you order a replacement circuit board, you'll get the Type S board. You can install a Type S board on a camera that originally had the Type T board; just wire the board as shown in Fig. 8.
3. Resistance values for R22 (coarse manual-inclination adjustment):

Resistance	Part Number
5.2K	9432-5224-33
6.2K	9432-6224-33
7.2K	9432-7224-33
8.2K	9432-8224-33
9.1K	9432-9124-33
10K	9432-1034-33
11K	9432-1134-33
12K	9432-1234-33
13K	9432-1334-33

Changing the value of R22 by one step changes the manual-inclination voltage by approximately 17mv.

4. Resistance values for R21 (fine manual-inclination adjustment):

Resistance (ohms)	Part Number
82	9422-8206-39
150	9422-1516-39
240	9422-2416-39
330	9422-3316-39
390	9422-3916-39
470	9422-4716-39
560	9422-5616-39
620	9422-6216-39
680	9422-6816-39
750	9422-7516-39
820	9422-8216-39
910	9422-9116-39

Changing the value of R21 one step changes the manual-inclination voltage by approximately 1.5mv.

Resistance values for R4 (auto-inclination adjustment):

Resistance	Part Number
20K	9422-2036-32
22K	9422-2236-32
24K	9422-2436-32
27K	9422-2736-32
30K	9422-3036-32

33K	9422-3336-32
39K	9422-3936-32
47K	9422-4736-32
56K	9422-5636-32
68K	9422-6836-32
100K	9422-1046-32
200K	9422-2046-32

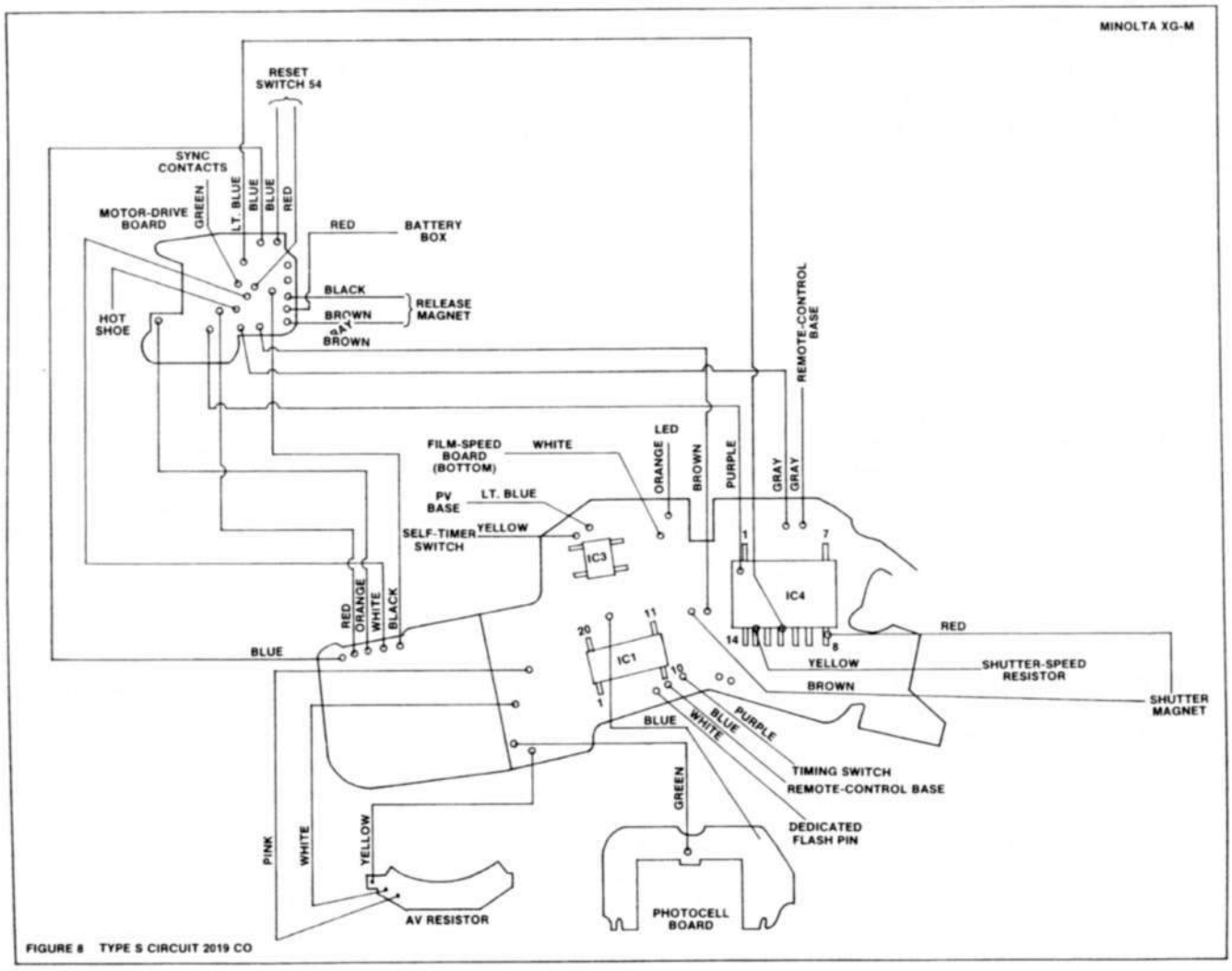


FIGURE 8 TYPE S CIRCUIT 2019 CO

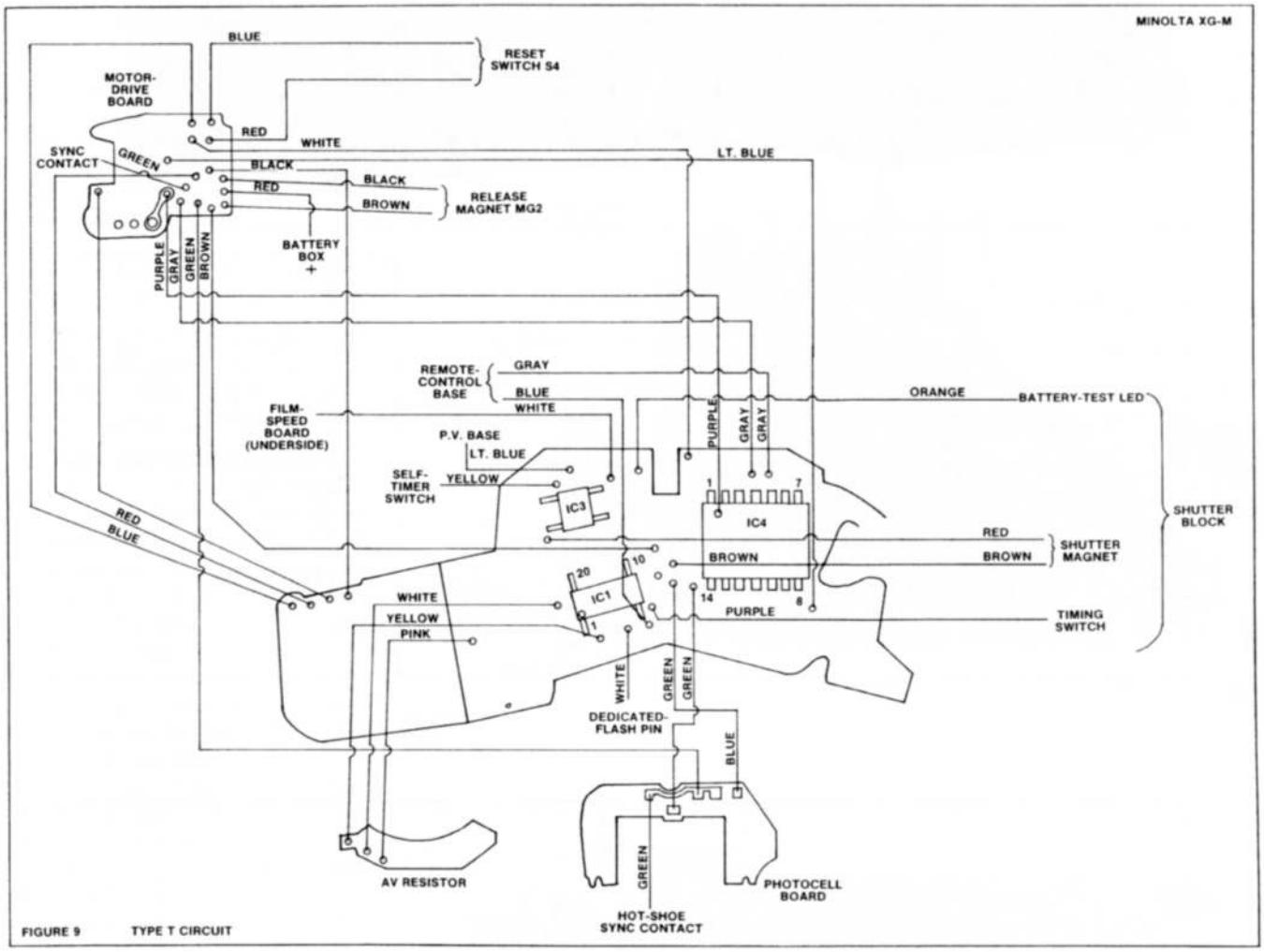


FIGURE 9 TYPE T CIRCUIT